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A New Application of Plant Auxin

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[54] Name of Invention      A New Application of Plant Auxin

[57] Abstract

The plant auxin eliminates bacteria and viruses in the plant organisms and can expel various toxins that are produced by the bacteria and viruses in the plant organisms.

CLAIMS

1. The existing applications of the plant auxin are: to promote taking roots and growth, to enhance fruit quality, to prevent flower drop and fruit drop, to restrain sprouting, to kill weeds; the new application of the plant auxin is characterized in that it eliminates bacteria and viruses in the plant organisms and expels various toxins that are produced by the bacteria and viruses in the plant organisms.

## SPECIFICATION

### A NEW APPLICATION OF PLANT AUXIN

This invention pertains to a new application of the plant auxin involving the elimination of bacteria and viruses in the plant organisms and expulsion of various toxins that are produced by the bacteria and viruses in the plant organisms.

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The prevention and cure principles of organic synthetic germicides involve having in some manner a direct impact on bacteria and interfering with its biooxidation and biosynthesis. However, since the structure and functions of pathogenic bacteria are similar to those of the cells of higher plants and animals, in killing the pathogenic bacteria, there is going to be some extent of impact on animals or plants, the so called "public harm" produced by agricultural chemicals. Exploring new agrochemical active substances, based on chemical and ecological studies, with a view to interfere with specific physiological functions of insects and microbes is a new path of developing agricultural chemicals. (The Advance of Plant Protection Research In China. Proceedings of the Third National Scientific and Technological Conference on Comprehensive Protection and Treatment of Agricultural Crops from Disease and Pests. Zhongguo Kexue Jishu Publishing House, 1996. P. 598 and 621. Laboratory of the Organic Chemistry of Elements, Nankai University. LI Shu-zheng.)

The purpose of this invention is to offer a drug that can eliminate bacteria and viruses in the plant organism and interfere with the ecological environment of the bacteria and viruses in plant organisms, that can expel the various toxins that are produced by the bacteria and viruses in the plant organisms, while being harmless to the plant organism.

For a long time, studies in plant physiology and biochemistry, as well as chemistry and ecology, as well as those on the prevention and treatment of pest have been finding: there is a relation of harmonic equilibrium among plants, microbes, and ecological environment. While microbes and ecological environment offer conditions for the plants to exist, at the same time, they endanger the growth and development of plants and cause disease, but through long evolution, plants have acquired a certain capacity to withstand microbial attacks and adverse ecological conditions. The primary agents that regulate plants' growth and decline are the auxin, cytokinin, gibberellin, abscisin, ethylene and various enzymes. Heteroauxin oxidase can decompose auxin. Auxin remains longest in the tip of a plant's stem and its root tip have the highest content, while the stem base has the lowest auxin content. Heteroauxin oxidase content is the lowest in the stem tip and root tip while it is highest in the stem base. The germs of the vascular bundle diseases wilt and bacterial wilt, referred to as plant cancer by agricultural scientists and technicians mostly proliferate in the stem base part where the auxin content is lowest while heteroauxin oxidase content is the highest; they secrete large amounts of toxins, hydrolyze the cell tissue of vascular bundles, damage physiochemical functions, leading to the illness and death of the affected plant. Viral plastochondrias inside the plant organism have a very hard time propagating to the stem tip and root tip tissues that

have the highest auxin content. Around the middle of the plant's growth period, that is around fructification, the plant's auxin is transferred towards the fruit, creating a drop of auxin content in the root, stem, and leaves, which is when the germs of wilt, bacterial wilt, rice white-leaf wilt, bacterial streak disease, and bacterial stem rot disease find it easy to attack the plant organism and the disease sets in. From this phenomenon we can infer that plant auxin has the effect of eliminating bacteria and viruses and expelling toxins.

In an auxin solution of less than 0.0000001 ppm concentration, *Erwinia chrysanthemi*, *huangjimaoganjun*, *Fusarium oxysporum* Schlecht, cotton wilt bacteria, tomato *Fusarium oxysporum*, sesame wilt, and other germs and the toxins they produce, the pathogens live and the toxin decomposition is slow; but as the auxin concentration is increased, the germs' lifespan shortens, and the toxin decomposition picks up speed. In an auxin solution with a concentration of 0.0001 ppm or more most germs cannot survive, and toxin decomposition is even faster. Similar results were obtained in experiments with wheat spindle streak mosaic virus, rice yellow stunt virus, mosaic of cucurbit crop virus, and other viruses.

Field experiments: 10~20 ppm auxin solutions were used prior to fructification period in a long affected areas: single spraying could delay by 5~10 days, and spraying twice could delay by 10~15 days (comparison experiments) the onset of the following conditions: bacterial blight, watermelon continuous crop wilt, sesame wilt, and green wilt. As the auxin concentration was appropriately increased, the effect improved, but at the auxin concentration of 60 ppm, adverse effect can be produced.

The results of the above theoretical analysis study and experimental results fully prove that there exists in the plant organisms a natural agent that eliminates bacteria and viruses and expels the multiple toxins they produce, that is, the plant auxin. This opens a novel path for a new type of agricultural chemicals that cause no public harm.